Synthesis of unsymmetrical derivatives of azaphthalocyanines IV.

Zuzana Dvořáková

Department of Pharmaceutical Chemistry and Drug Control, Faculty of Pharmacy in Hradec Kralove, Charles University in Prague, Heyrovskeho 1203, Hradec Kralove, 50005, Czech Republic

Phthalocyanine (Pc) and their azaanalogues (AzaPC, which have some carbons in their macrocyclic system replaced by nitrogens) belong to group of photosensitizers, which are used for photodynamic therapy in treatment of various cancer diseases. The effect is given by ability to generate reactive oxygen species (e.g. singlet oxygen) after light absorption. The aim of the work is to synthesize AzaPc with optimal properties and with a high efficiency in singlet oxygen production.

New unsymmetrical AzaPc with different numbers of pyridyl on periphery were synthesized with zinc as central metal. Different ZnAzaPc were prepared using a statistical condensation starting from two precursors (5,6-bis(*tert*-butylsulfanyl)-pyrazine-2,3-dicarbonitrile (A) and 5,6-di(pyridin-2-yl)pyrazine-2,3-dicarbonitrile (B)). From the mixture of six posibble AzaPc, four of them (AAAB, ABAB, AABB, ABBB) were isolated by column chromatography. The symmetrical (AAAA, BBBB) substances were not isolated from the mixture, they were compared with standards. All prepared substances were characterized by NMR, IR, MS, UV-VIS spectroscopy.